

# HYDROG(E)NICS

SHIFT POWER | ENERGIZE YOUR WORLD



## **Fleet Vehicles and FCEV Market Introduction – Prerequisite or Complementary Development?**

Rob Harvey  
Director, Energy Storage

IEA Hydrogen Roadmap  
Paris – July 10, 2013

## Hydrogenics is a leader in water electrolyzers and hydrogen fuel cell power systems

### Onsite Generation Electrolysers



Industrial hydrogen



Hydrogen fueling

### Power Systems Fuel Cell Modules



Stand-by power



Mobility power

### Energy Storage Power-to-Gas





## Fuel Cell Buses successfully deployed around the world





## Growing penetration of FCEV fleet trials as well



Basel, Switzerland



Toronto, Canada



Berlin, Germany



North Rhine Westphalia, Germany



Port of Los Angeles, CA, USA



Joint Base Hickham-Pearl Harbor



Palm Springs, CA, USA



TACOM/General Motors

## Fleet Vehicles and FCEV Market Introduction – Prerequisite or Complementary Development?





## A brief case study: propane fuelled fleet vehicles

### Toronto Airport Limousine Fleet



- Lower emissions
- Longer engine life
- 30 propane fuelling stations in GTA
- Cheaper fuel
- Proven success story



- No closer to propane vehicle market introduction

Source: Wheels.ca, December 3, 2012

## **Fuel Cell powered fleet vehicles can help stimulate FCEV market introduction but it is not a sufficient condition**

### ***Benefits of Fleet Vehicles***

- Zero emission transport in downtown core
- Mobile billboards promote awareness
- Engagement of City Officials for FCEV transit programs
- Fleet vehicle adoption will demonstrate viability
- Potential stepping stone to help build manufacturers' scale

### ***Missing Pieces for FCEV Market Introduction***

- Fleet depot fueling station will not help provide critical mass of hydrogen fuelling infrastructure required
- Car manufacturers making investment to scale up production for consumer cars

### ***Opportunity***

- Potential for building complementary fuelling infrastructure

## The Vattenfall hydrogen fuelling station serving both bus fleets and FCEVs is a good example



### Hamburg, Germany

**780kg/day, 350/700 bar dispensing**

Located in the center of Hamburg in front of “Der Spiegel” newspaper offices, the station is the biggest worldwide, capable to refill busses and passenger cars. The station has 120Nm<sup>3</sup>/h electrolyzers, 430kg 45bar storage and 250kg 830bar storage and follows the SAEJ 2601 refueling protocol.